Building a Network of Centres of Excellence in Water Sciences and Technology Development

The New Partnership for Africa's Development (NEPAD) Office of Science and Technology (OST) will soon invite African research organisations active in water research to submit their institutional profiles/projects for consideration to be designated as NEPAD Centres of Excellence in Water Sciences and Technology Development.

In the African Science and Technology Action Plan (available in: http://www.nepadst.org/doclibrary/pdfs/ast_cpa_2007.pdf) a flagship research and development (R&D) programme on securing and sustaining water has been identified. This flagship programme focuses on water quality, sanitation and water resources management. Emphasis is on promoting increased use and production of scientific knowledge and technological innovations. Its specific goals are to:

- Improve the conservation and utilization of the continent's water resources;
- Improve the quality and quantity of water available to rural and urban households;
- Strengthen national and regional capacities for water resource management and reduce impacts of water related disasters; and
- Enlarge the range of technologies for water supply and improve access to affordable quality water.

This plan of action and its programme focuses on setting up the network of Centres of Excellence in Water Science and Technology Development. This network will be organized as consortia of institutions with capacities to integrate, promote and structure research and training skills in their own region. The main objective of institutional networking approach is to maximize the benefits from the synergy of information exchange, the richness of diversity and shared resources. Success will depend on the voluntary participation and contributions of different governments and relevant institutions. This initiative is based on the following principles:

- Recognition that no single institution can generate knowledge and information required to implement all the programmes and projects in all regions. Strong commitment by groups of participating institutions to take responsibility to work collectively, in each region and between the different regions.
- Commitment by participating institutions to devote some of their existing resources to support the implementation of the programmes and projects.

- Commitment by African countries to provide financial resources and technical capacities.

The distribution of functions between and among participating institutions will depend on the capability and location of the organizations. The networks will largely:

- enable African countries and their scientists to have access to world-class laboratories for the conduct of cutting-edge scientific research and innovation so as to contribute to human development;
- promote sharing expertise, financial resources, facilities and knowledge among institutions;
- contribute to the creation of a new generation of skilled African scientists; and
- contribute to the alleviation of poverty and enhancement of human development.

The agency networking will be deployed through a support from the NEPAD to plan, mobilize, promote and coordinate skills and programmes.

Process

NEPAD will launch a call for proposals within all governmental institutions.

Evaluation:

A committee will be established to evaluate the institutional profiles. The committee will be composed of scientists, experts on capacity building projects, experts on institutional management, experts on new technologies of communication and information.

Format:

A guide is provided to prepare the presentation of your institution/project. Please note that the guide and its fields should not be changed and that the form should not exceed 15 pages in total. Incomplete submissions will not be considered and may be referred back for completion.

Deadline for submission:

15th May 2007

APPLICATION FORM

1. Lead/Submitting Organisation: UNIVERSITY OF BENIN

2. Department/division: VICE CHANCELLOR'S OFFICE

3. Postal address: *(PO Box, City/Town, Postal code, Country)* PMB 1154, BENIN CITY, EDO STATE, NIGERIA

4. Physical address: *(Street + Street number, City/Town, Postal code, Country)* UNIVERSITY OF BENIN, UGBOWO CAMPUS, BENIN CITY, EDO STATE, NIGERIA

5. CONTRACT SIGNATORY (*i.e. Authorised representative of the Lead/Submitting organisation*)
Correspondence details are mandatory for the person duly authorised to sign the contractual Research Agreement on behalf of the Lead Organisation (i.e. the 'Contractor' in the Agreement).
Full name: (*Title, Initials, Last name and First name)* **PROFESSOR E. PANDY KUBEYINJE**
Position/Capacity: *(i.e. in the Organisation)* **Ag. VICE CHANCELLOR**
Telephone number: +234 802 331 2082
Fax number:
Email address: vckubeyinje@uniben.edu
Physical address: *(i.e. to which official documents should be delivered)* **Vice Chancellor's Office, University of Benin, PMB 1154, Benin City, Edo State, Nigeria**

6. COLLABORATING ORGANISATION(S)
(Provide details of all organisations that will participate in/contribute to the project (research and training)
Organisation + Name of department/division:
The faculties in the University of Benin which cover many related departments that contribute to the research and training in almost all facets of water include the followings:

- Faculty of Engineering (Departments of Civil & Chemical Engineering)
- Faculty of life Sciences (Department of Environmental Biology)
- Faculty of Physical Sciences (Department of Geology and Chemistry)
- Faculty of Agriculture (Department of Fisheries, Forestry and Wildlife)
- College of Medical Sciences

Contact person and designation: **Professor Anthony B. Ebeigbe**
Address: (*i.e. Postal or Physical*):
Professor Anthony B. Ebeigbe,
Professor of Physiology, College of Medical Sciences, University of Benin &
Executive Director,
Global Educational Initiative For Nigeria (GEIFON),
No. 2, 19th Street, EDPA Housing Estate, Ugbowo, Benin City, NIGERIA
Tel: +234 805 850 3192
e-fax: +1 315 702 1892
E – Mail Address: ebeigbe@fulbrightmail.org

Organisation contributions: Research and training in the various areas related to Water Resources

ORGANIZATION + NAME OF DEPARTMENT / DIVISION: **Edo State Urban and Rural Water Board**

CONTACT PERSON & DESIGNATION: **Mr. Frank Obasogie, General Manager**
ADDRESS (i.e. Postal or Physical): **Edo State Urban and Rural Water Board, Sapele Road, Benin City, Edo State, Nigeria**

E – Mail Address:
ORGANIZATION CONTRIBUTION: Water resource Planning, exploration, Development and management of water resources in various communities in Edo State, Nigeria.

ORGANIZATION + NAME OF DEPARTMENT / DIVISION: Benin – Owena River Basin Development Authority, Obayantor, Benin City
CONTACT PERSON & DESIGNATION: Mr A.L. Ijasan
ADDRESS (i.e. Postal or Physical): Owena River Basin Development Authority, Obayantor, Benin City, Nigeria
E – Mail Address: **ijasan@yahoo.com**
ORGANIZATION CONTRIBUTION: Water resource Planning exploration in Rural Areas, Development, Water conservation and Quality Analysis.

ORGANIZATION + NAME OF DEPARTMENT / DIVISION: Niger Delta, Development Commission, (NDDC)
CONTACT PERSON & DESIGNATION: Engr. F. N. Ogbeide, Project Manager
ADDRESS (i.e. Postal or Physical): NDDC State Office, Upper Adesuwa Road, Benin City.
E-mail Address: nosakhderick@yahoo.com
ORGANIZATION CONTRIBUTION: Rural Water supply and Management.

7.0 MOTIVATION

Provide the following in the presentation of your project

- Which project, with whom (institutions), in which specific area (s) in the water sector?
- What potential socio-economic impacts of this project/association are expected for the country and the region and its people?

A clear problem statement and the potential value should from the basis for the motivation. The motivation should address the need for new knowledge and skills or knowledge/skills enhancement in the specific area of water or water sector.

7.1 PROBLEM STATEMENT AND POTENTIAL VALUE

Nigeria, located in West Africa bordering the gulf of Guinea between Benin Republic and Cameroun extend from latitude 4^0N to 14^0N and longitude 3^0 3'E to 14^0 30'E.
The country with a population of 131, 540000 people (2005 Population Census) and density of 142 people / Km^2 has a total area of 923,868 sq Km with land area equal to 910,768Km^2 and water equal to 13, 000 sq Km. Nigeria has a coastline of 853Km bordering the Atlantic ocean.

Nigeria experiences about four basic types of climatic zones. These include the **equatorial climate** in the south, **Guinea climate** in the middle, **dry tropical climate** in the North with the **Sahel** in the extreme North.

Within the equatorial climate zone, rainfall occurs throughout the year with annual total of about 1500mm. Humidity is high - about 80% on average and temperature is uniformly high throughout the year at about 27^0C on the average.

Benin City the home base of the University of Benin and most parts of Edo and Delta State lie within this zone.

The Guinea climate is found in the Guinea Savanna zone and covers a belt about 250km

wide. The rainy season in this zone lasts for about eight months and annual rainfall ranges from about 1000mm to 1500mm. Relative humidity is 60% on the average and average annual temperature is about $27^0C - 30^0C$.

The dry tropical zone is hot for most part of the year with temperature ranging from $30^0C - 35^0C$. The months of January and February are however about cool with temperature a little above 20^0C because of the effect of the Harmattan. Within the Southern part of the Country, three types of vegetation are typical. The Salt water swamp is found mainly within the Niger delta region. The ground is usually water-logged and the water is blackish. This is tidal zone where floods rise and fall conspicuously everyday.

The fresh water swamp zone is usually beyond tidal reach and fresh water is continuously being supplied from the interior by the Niger and the Benue Rivers. In both the fresh and salt water swamps, the influence of man is very limited; owing to the dense tangles of undergrowth and aerial roots, the area is difficult to penetrate by man. As a result of water-logging, roads hardly exist, therefore accessibility is usually difficult.

Too much rainfall in the Niger Delta region and the coastlands and too little rainfall in the Savanna region can be harmful for agricultural development.

Land reclamation can help solve the problem of the effect of too much water in the coastal area while extensive irrigation facilities can help solve the problem of too little rain in the North.

Water resources can be harnessed by regulating river flow to improve irrigation for agriculture, water supply, water transportation and hydroelectricity generation.

Even though there is abundant rainfall and appreciable surface flow, most water supply projects in Nigeria rely more on ground water resources. With rapid increase in population, the demand for water, both for agriculture, water supply, hydropower generation etc will continue to grow.

The continuous construction of dams across rivers for hydropower generation will continue to reduce the volume of water downstream, and if not properly managed, other sources of water supply will be required in such areas. In addition, ecosystem and vegetation necessary for agriculture and wild life will be adversely affected.

Based on the global climate the levels of water in rivers and lakes are fast reducing. In most urban centres, almost 80% of the population resort to sinking of boreholes in search of portable water supply while the rural communities rely on rivers and streams that receive pollutants from oil exploration, domestic wastes and industrial effluents. Consequently, water-borne diseases have become highly prevalent among both rural and urban dwellers.

The health of a community's water system is naturally a concern to its citizens. They expect to be protected from floods, to have a reliable water supply as well as to fish and swim in their rivers and streams. Therefore proper water management, prevention of flood and water-related diseases will constitute an important component of Nigeria's development strategy.

In view of the above, the University of Benin wishes to actively participate as one of the networks of centres of excellence by presenting its team of experts in the water sector through an envisaged "Centre of Water Resources" here in the university.

The centre aims to look at all issues related to water resources including: assessment of available water resources, its treatment, uses and management, Inspection and monitoring of existing water facilities, ecosystems, health conditions, socio economic aspects, water related disasters such as flooding, water pollution and their management.

Also to be examined are issues related to hydro data modeling, water expansion and management of water schemes through adaptation and development of state-of-the-art Technology.

The centre through NEPAD, by reason of its strategic location, can serve as one of the centres of excellence and envisaged to be quite effective not only for the earlier stated reasons but for its strategic location midway between the Western and Eastern part of Southern Nigeria. The centre will also work in close proximity with agencies such as Benin – Owena river Basin Authority, Niger Delta basin and Rural Development Authority, Niger Delta Development

commission and Edo State Urban water board - all of which already have close working relationship with the University of Benin.

8. BACKGROUND INFORMATION

(Please provide the following background information)

8.1 SCIENTIFIC AND INNOVATION

1) **Human Resources Development**: The centre will advance the skills/assist in personnel M.Sc/M.Eng and M.Phil./PhD programmes offered by the University of Benin under various departments.

2) Percentage of Scientists With Training In Advanced Areas:
More than 85% of the Staff have training in advanced areas (Environmental Engineering, Hydrobiology, Hydrology, Engineering Hydraulics, Water Resource Modeling, Analysis and management, Hydrogeology/Geophysics, Climatology, Geoinformatics, Ecology, Groundwater Hydrology, Pollution and/waste management, mathematical modeling, ARC hydro GIS for Water Resources Modelling, Environmental management and Environmental Social Economics).

3) P**ercentage of Scientists Undergoing Training** for a higher Degree: Less than 5% of staff are undergoing/envisage to undergo higher education in specialized areas.

4) **Satisfaction of Scientists regarding opportunities** for resources development established through A survey: There is a high level of satisfaction among the Staff in their working environment and opportunities are available for their career advancement and also the scientists receive competitive salary and allowances as available in the country.

8.2 CAPACITY AND MENTORSHIP

Post graduate Education Programmes: The University provides various Post graduate Studies leading to the award of M.Sc/M.Eng and M.Phil/PhD degrees - to advance candidates' knowledge in related areas of Water Resources management. The university also encourages Joint supervision with experts within and outside the University.

- **M.Sc and PhD Students:** At present, the University of Benin has more than 55 M.Sc/M.Eng and M.Phil/PhD students in Water related areas of research.

- **Short term Visitors:** The University of Benin specifically, in the faculties of Agriculture, Engineering, Medicine, Physical and life Sciences do receive many short term visitors from time to time on Sabbaticals, external examiners and collaborating research partners in various projects. Members of University also network and receive participants for short-term courses from various departments of government and other agencies.

- **PARTNERSHIPS WITH Other Institutions**, particularly the less endowed NGO's (Viz: Society for Water and Public Health Protection SWAPHEP, GEIFON).

The University has been very active in the steering Committee of shared basin commission such as ADP, Benin-Owena River Basin Authority, Edo State Urban Water Board and Niger Delta Development Commission NDDC)

8.4 ACTIVITIES AND SCIENTIFIC OUTPUT

1) **Outstanding Research Programmes**

- Surface and Groundwater resource assessment and inventory
- Quality impact and mitigation of urban, agricultural and construction site storm water run off studies
- Analysis of water quality data
- Evaluation of structural and non structural best management practices.
- Development of watershed based storm water management plans
- Ground water Hydrology, groundwater pollution studies, close and Risk assessment, multiphase flow.
- Water demand and conservation Studies
- Remote Sensing and ARC GIS Hydro data modeling
- Groundwater modeling and Investigation
- Hydrogeology and Geophysical investigation
- Water infrastructure Inspection and monitoring
- Water distribution System/Network modeling
- Safety and Fire flow modeling
- Catchment and source protection

2) Number of peer reviewed publications related to the areas of proposed research. (Please list only those published in 2007 - 2009)

Publications mainly relate to the year 2007 and partially for 2008 and 2009 as listed below:

1. Anyata B.U. and Omotosho T (2007): Palm Kernel Shell as a filter material for economic treatment of rural water" Advances in materials and system technologist, Trans-Tech Publications, Switzerland Vol. 18 -19, Pp 543 – 548.
2. Arazu, V. & Ogbeibu, A.E. (2009). Parasites of Clarias gariepinus obtained from culture and wild specimens of Onitsha urban stretch of River Niger. Anambra state, Nigeria. Tropical Freshwater Biology 18(1): (In press)
3. Arimoro, F., Ogbeibu, A.E. & Raifu, F.F. (2007). Phytophilous macroinvertebrates of floating Nymphea lotus and pistia stratiotes in river Orogodo, Niger-Delta Tropical Freshwater Biology 16(1): 75 – 87.
4. Audu HAP & Ehiorobo) O.J. (2009) " Application of GIS in the Canalization of Oghara Ijaw Creek journal of Civil and Environmental Systems Engineering.
5. Badmus, M.O.A, Audu, T.O.K., and Anyata B.U. (2007) Removal of copper from industrial Waste Water by Activated carbon prepared from periwinkle shell.
6. Edema, C.U., Ogbeibu, A.E. & Ehiogie, E.O. (2009). Morphormetric measurements of barbells, head and standard length of catfish from Osse River, Nigeria. Tropical Freshwater Biology. 18(1):
7. Ehigiator, O.A. and Anyata, B.U. (2007) "An Exponential rainfall depth-intensity formulation for western Nigerian" in Advances in Malgrats and Systems Technology, Transtech Publication, Switzerland Vol.18-19 pp 557 - 562.
8. Ehiorobo O. J. (2009) "Accuracy of Static Differential GPS techniques; implication for structural deformation monitoring" Advanced materials research Trans-tech publication Vols. 62 – 64, Pp 31-38.
9. Idodo-Umeh, G. & Ogbeibu A.E (2009). Bioaccumulation of the heavy metals in cassava tubers and plantain fruits growth in soils impacted with petroleum activities. Research Journal of Environmental Sciences (In press).
10. Izinyon, O. C. and Akhigbe, L.O. (2008), "Hydraulic Modeling of a Water Distribution Network Using EPANET". NJEM, Vol. 9,No. 1 pp 33 – 42
11. Izinyon, O. C. and Anyata, B.U. (2008) "Use of Hydraulic Network Model for

Evaluating Fire Flow Capacity of a Water Distribution Network". Journal of Advanced materials Research, (AMR) Trans Tech Publications, Zurich, Switzerland. Vol. 62 -64

12. Izinyon, O. C. and Anyata, B.U. (2008), "Investigation of Water Distribution Systems Performance under Emergency Conditions". Journal of Engineering Development JED.
13. Izinyon,, O.C. and Anyata, B.U. (2008) Well storage effects on pumping tests in reactivated boreholes in crystalline basement Aquifer. NJISS Vol.7 No.1 pp 33 – 38.
14. Obahiagbon K.O. and Owabor C.N. (June, 2008): "Biotreatment of Crude Oil polluted water using mixed microbial populations of p.aureginosa, Penecillium notatum, E.coli and Aspergillus Niger". Advanced materials Research, Vol. 62 – 64, 802 – 807. Website: http://www.scientific.net
15. Obahiagbon, K.O and Okieimen, C.O. (2007), "Comparison of the levels of some Toxic heavy metals in Underground Water from shallow and Deep Wells in Niger-Delta: A Case study of Warri, Nigeria". Journal of Chemical Society of Nigeria, 32. p 28 – 31
16. Obahiagbon, K.O. and Akhabue C. (2008): "Effect of microbial count of Pseudomonas aureginosa on Biodegradation of Crude oil Contaminated Water Journal of petroleum Science and Technology *Website:*http://www.drjamesspeight.qpg.com
17. Obahiagbon, K.O. and Olowojoba, G.B. (2007), "Bioremediation of brewery wastewater using Aspergillus Niger and inorganic fertilizer", Nigerian Journal of Biomedical Engineers,. Vol. 5(10. Pp. 49 – 54.
18. Obahiagbon, K.O. and Olowojoba, G.B. (2007), "Distribution of Some Heavy Metals in Leachates from Municipal Waste Dumpsite", Advanced materials Research, Vols. 18 – 19, pp. 495 – 500. .(Indexed). Website: hppt://www.scientific.net
19. Obahiagbon, K.O. Ukpebor, E.E. (2007). "Some Heavy metal Levels in Underground Water From Two Urban Areas in Midwestern Nigeria". Nigerian Journal of Biomedical Engineering, Vol. 5(1). Pp. 31 – 34.
20. Oboh, I. & Ogbeibu A.E. (2007). Length-weight relationship of five fish species in Jamieson River, Southern Nigeria. Tropical Freshwater Biology. 16(2): 57 – 67.
21. Ogbeibu, A.E. & Oribhaboir, B.J. (2009). Environmental factors influencing the distribution of marine zooplankton in Buguma Creek, Niger-Delta, Nigeria. Research Journal of Environmental Sciences (In press)
22. Ogbeide, A.E. & Anozia, C. (2007). Impact of dredging on the rotifers of the Ikpoba River, Southern Nigeria. International Journal of Ecology and Environmental Sciences 33(4): 293 – 300.
23. Ogbeide, S.E., Okieimen, C.O. and Imasuen, W.O. (2007): Application of low cost Absorbents for Removal of Contaminants from Aqueous Waste Streams: A Review. Nigerian Journal of Biomedical Vol. 5 (1). Pp. 35 – 42.
24. Oguzie, F. A. and Okosodo, C.I. (2008) Contribution of heavy metals in Waste Dump sites from selected markets to heavy metals load of Ikpoba River, Benin City. Nigerian Journal of Field Aquatic Studies. 4, 51 -81.
25. Oguzie, F.A. (2008) bioaccumulation of Heavy metals in selected fish species of Ikpoba river in Benin City", Nigeria Journal of Fisheries (in Press)
26. Oguzie, F.A. and Igwegbe, A.O. (2007) Heavy metal Concentration in water and three West African cichlid Fishes of Ogba river, Benin city. Journal of Field Aquatic Studies 3: 41 – 48
27. Okonji V.A. and Enoma T.O. (2007); Gross Chemical composition of some pond raised and river Fishes in Nigeria. Tropical Fresh water Biology Vol. 16, No.2 pp27 – 33.
28. Okonji, V.A. and Amere Vuawho M.O. (2007), "Effect of Unconsumed feed on water quality and growth rate of clarias ganepians under semi- intensive system.

African Journal of General Agriculture AJGA 2(2) 27.

29. Olele, N.F., Obi, A. and Okonji V.A. (2008) Composition, Abundance and Distribution of Fishes in Onah Lake, Asaba, Nigeria. UNISWA Research Journal of Agriculture, Science and Technology. Vol. 11, No.1 pp 33 – 43.
30. Omoigberale, M.O & Ogbeibu A.E. (2009). Environmental impacts of oil exploration and production on the macrbenthic invertebrate fauna of Osse River, southern Nigeria. Research Journal of environmental Sciences (In press)
31. Omoigberale, M.O. & Ogbeibu A.E. (2007). Assessing the environmental impacts of oil exploration and production on the water quality Of Osse River, southern Nigeria. Global Journal of Environmental Sciences 6(1): 1 – 13.
32. Oribhabor, B.J. & Ogbeibu, A.E. (2009). The Ecological Impact of Anthropogenic Activities on the Macrobenthic invertebrates on a Mangrove Creek in the Niger-Delta, Nigeria. Asian Journal of Microbiology, Biotechnology and environmental Sciences 2: (In press)

8.5 AVAILABILITY OF APPROPRIATE INFRASTRUCTURAL FACILITIES

- FUNCTIONING STATE OF ART EQUIPMENT:-All state of the art equipment such as: field and laboratory hydrology, hydrogeology models and lab kit, Atomic Absorption Spectrometer (AAS), G as Chromatograph (C G), Electron Microscope, Electrodialysis, ultra filtration reverse Osmosis, NMR, XRDP, EMU Remote Sensing and GIS laboratory, Laminar/Turbulent Pipe Flow Apparatus. H7/H7A, Evaporating Dish 100mm Porcelain, Evaporating Dish 120mm Procelin, Evaporating Dish 150mm Porcelain, Oven Drying Thermostatic Model PH030 Capacity 53L, Desicator 100mm, Desicator 150mm, Desicator 210mm, Desicator 300mm, Flocculator, Staurt, 2 Banks, WR 230-05, Digital Speed Indication, Imhoff Cone, Graduated with Stopper, WR150-10, Turbidity meter, Portable, Jenway Model 6035, UV/Visible Spectrophotometer (JENWAY) Model 6305, Flame Photometer, Jenway Model PFP7, Incubator, pH Meter, Thermometer, 10-110 Deg. Cen., Dissolved Oxygen meter, etc.

APPROPRIATE SYSTEM OF MAINTENANCE AND REPAIR OF EQUIPMENT:- Equipment maintenance Centre, University of Benin.

- Adequate Supply of Consumables: Available through University annual budgetary Vote to different departments.
- Adequate library facilities: The University provides state of the art library facilities with wide collection of books and journals both at the central library and departmental / Faculty libraries.
- Adequate internet connection: Available in all academic offices, library and departmental offices.

8.6 OUTSTANDING LEADERSHIP OR PARTNERSHIP

- Regional and international recognition in scientific research.
- The research leaders and their contribution for winning several Projects of international importance such as:

- NDDC: Aqua culture sector studies in 2006
- NPDC: Environmental Impact Assessment of Ossioka C crude Oil Location
- Control of Obnoxious fishing method sponsored by Ford Foundation
- EIA in Ekehua road project, NDDC
- Water resources and Storm water Design Durumi and katampe Districts Abuja sponsored by Federal Capital Development Authority FCDA
- Design of PTF II abandoned water project at Auchi Polytechnic, Auchi.
- Studies and Design for flood and Erosion control at Uzebu and Ivbiotor/St Saviours

Quarters, Benin City (sponsored by Edo State Ministry of Environment).

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8.7. AVAILABILITY OF AN APPROPRIATE BUDGET FOR PROGRAMMES AND ACTIVITIES AND COMMITMENT BY LOCAL GOVERNMENT TO PROVIDE SUPPORT TO ENSURE THE CONTINUITY AND SUSTAINABILITY OF THE OPERATION OF THE CENTRE

- Annual budget of the centre
- Commitment by Government in support of the centre: The University has established guide lines for the establishment and financing of the centre within the University. Since the university receives its budget from the Federal Government, there will be an indirect commitment to the centre. We also envisage some assistance from Donor agencies such as The Niger-Delta Development Commission NDDC, UNICEF, European Union, UNDP, IDA (WORLD BANK) etc

8.8 SOCIAL AND ECONOMIC

Expected process to set up your Project (Centre) in connection with regional partners: The University of Benin possesses the necessary infrastructure for project development and networking through the office of Exchanges and Linkages unit of the Vice Chancellor's office. Adequate Networking experience exists through previous and ongoing projects as mentioned earlier.

Regional and continental outlook of the centre and ability to network within the institution's host country and the continent: Joint activities/initiatives with institutions in the host country as well as the continent

Adequate Networking experience exists, through previous and ongoing projects as mentioned earlier.

Flexibility and ability to forge scientific and technical partnerships with institutions in other developing nations: Joint activities/initiatives with institutions outside Africa:

The Exchanges and Linkages unit of the Vice Chancellor's office has considerable experience in networking and partnerships with international institutions/organizations, particularly, those in Europe and North America. There is currently an on-going undergraduate summer research partnership programme with Howard University, DC and Hampton University, Virginia, USA.

Relevance and impact of Research output, including transfer of water technologies to Poor African nations households;

Support for community management of resources and ensure access to portable water. Role of women in water Resources management, conservation and sustain water access to communities is appreciated and encouraged.

Recognized contributions to solving local and regional problems in issues related to water:

By virtue of the unique location of the University of Benin within the Niger-Delta area of Nigeria, a number of our experts are continuously involved in supporting local and regional research, outreach and consulting services, in partnership with various stakeholders for community development.

Partnerships with industrial and private sectors to develop and market water technologies;

Some of our experts have strong links with industries and private sectors; the **University of Benin Enterprise** is a private commercial company involved in the production of table water.

Joint Ventures activities/initiatives with local institutions and private sectors;

Same as above – and work with local institutions and consulting firms exist such as **University of Benin Enterprise -** for the production of table water.

Address sustainable access to safe and adequate water and sanitation services for all:

The are several on-going undergraduate and postgraduate projects in the faculties of Engineering, Life Sciences and Agriculture that are geared towards contributing to the above challenges.

Percentage of projects devoted to supporting the implementation of the MDGs.

We estimate that over 60-70% of on-going projects mentioned above will generate significant Research findings which will indirectly contribute to the MDGs.

9. QUESTIONS AND NEEDS

- **Describe or list the needs or means required to implement your project (set up a data base, specific equipments, etc.)**
- **You can give us your first financial assessment report.**

We propose to undertake baseline Water Resource Studies with particular reference to Pollution of Groundwater in the short term (2 years) and mid-term (6 years) as well as the inspection and monitoring of existing water dams and the main water courses of River Niger, Ikpoba, Ossiomo, Ovia, Ethiope, Orogodo and Uleha rivers among others in Edo and Delta States of Nigeria. The proposed research team will consist of the following categories of personnel:
Lead experts (8)
Research Assistants (7)
Students (20 M.Sc. and 10 M.Phil/PhD) (30).
The preliminary budget estimate has been obtained on the basis of requirements in respect of the following items:
Research Equipment, Laboratory/Field work, Data analysis, Stipend for students and Assistants, local travels, computer hardware and softwares as well as contingency. An approximate total for six (6) years is US $ 3.0 million.

As is our common practice with international projects, the University of Benin will provide a matching grant in the form of staff salary and other existing university research grants to Staff.